

CALIFORNIA
ENERGY
COMMISSION

FEASIBILITY OF A STRATEGIC FUEL RESERVE IN CALIFORNIA

COMMISSION REPORT

JULY 2003
P600-03-013CR



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Disclaimer

This report was prepared by the California Energy Commission's Transportation Committee to be consistent with the objectives of Assembly Bill 2076 (Shelley, Chapter 936, Statutes of 2000). The report was adopted by the Energy Commission on July 23, 2003.

Summary and Overview

In the last few years, California motorists have experienced significant short-term increases, or “spikes” in the price of gasoline. The state’s gasoline refineries are operating at near maximum production, and when an unplanned refinery outage occurs, especially when gasoline inventories are low, the price of gasoline can spike. Outages drive the price higher because of the temporary imbalance between supply and demand. The price increase required to restore this balance can be significant due to a very low demand response—California motorists have little alternative to gasoline use in the short run.

Gasoline sold in California requires a unique, less-polluting formulation. This means that sources of supply outside the state are limited. Since California is not connected by pipeline to major refinery centers elsewhere in the country, imported gasoline must be brought in by marine tanker. In the event of an in-state supply disruption, locating and importing replacement gasoline can take from two to six weeks. Prices often remain at high levels until shortly before these additional supplies arrive.¹

California’s gasoline price volatility,² of which price spikes are the most obvious feature to motorists, can result in prices much higher than in the rest of the country. The difference in retail prices between California and other regions, typically 5 to 20 cents per gallon, can increase to 50 cents or more per gallon as a result of in-state supply disruptions. During the latest price spike episode in early 2003, average retail prices in California increased by 57 cents per gallon and reached levels 40 cents higher than average prices elsewhere in the U.S.

In response to continuing periods of gasoline price volatility and their impact on consumers, the Attorney General formed the Gasoline Price Task Force to examine the causes of price spikes. The results of the Task Force study are described in *Report on Gasoline Pricing in California*, issued in May of 2000.

The report recommends that the state investigate the possibility of a “strategic fuel reserve,” consisting of gasoline kept in public storage tanks that would be available to private suppliers through a daily auction. The intent behind such a reserve is to make additional gasoline available to the California gasoline market during supply disruptions, and thereby reduce, or “dampen,” price spikes. This recommendation led to the passage of Assembly Bill 2076.

Assembly Bill 2076 (Shelley, Chapter 936, Statutes of 2000) directs the California Energy Commission (Commission) to assess the feasibility of operating a state strategic fuel reserve (SFR) to insulate consumers and businesses from the substantial short-term price increases arising from refinery outages and other in-state supply disruptions. The Legislation includes detail on the nature and preliminary mode of operation of an SFR, and is consistent with the concept given in *Report on Gasoline Pricing in California*. The Commission incorporated this detail into the specific reserve concept

which is described in this report through numerous consultations with stakeholders and contracts with experts in California's petroleum refining and marketing sector.

The statute also directs the Commission and the California Air Resources Board (CARB) to develop and adopt recommendations for a California strategy to reduce petroleum dependence in California. This latter directive has been undertaken as a separate proceeding by the two agencies.³

What Does the Commission Recommend?

Based on its evaluation of a strategic fuel reserve and the causes of California's gasoline price volatility, the Commission recommends the following actions.

First, the Governor and Legislature should not proceed with the strategic fuel reserve concept evaluated by the Commission. The Commission found that a strategic fuel reserve could have several unintended consequences, which could limit its effectiveness as a tool to moderate gasoline price spikes and could reduce the total supply of gasoline in the state. In addition, the Commission has determined that investment in private storage capacity is increasing, which reduces the need for SFR public storage.

Second, the Commission should undertake a comprehensive evaluation of California's future petroleum product import needs, in consultation with the following agencies:

- The State Lands Commission,
- The Ports of Los Angeles and Long Beach,
- The Coastal Commission, and
- The San Francisco Bay Conservation and Development Commission.

This evaluation should identify steps that the state can take to ensure that marine infrastructure and port facilities will be adequate to accommodate the unconstrained movement of petroleum products during the next twenty years.

Third, the Governor and Legislature should identify a state licensing authority for petroleum storage infrastructure and related facilities. A state licensing authority would help ensure statewide and regional cooperation among permitting agencies, eliminate duplication of efforts, provide a time-certain process, and reduce costs borne by applicants and agencies.

What is the Strategic Fuel Reserve Concept?

As noted above, the Commission evaluated an SFR concept that includes the features described in the Attorney General's *Report on Gasoline Pricing in California*. Suppliers could withdraw California Phase 3 reformulated gasoline from the reserve through a

daily auction, with replacement required within a specified period of time. With this “time-swap” mechanism, gasoline from the SFR could be released daily to the highest bidder.

A period of rising prices and/or an expectation of a drop in prices in the near future would create an incentive to bid on reserve fuel: refiners and traders could sell SFR gasoline in the market at a relatively high price and, at least ideally, purchase replacement supply at a lower price. The release of gasoline from the SFR could in turn dampen a price increase, to the benefit of consumers.

Unlike the Federal Strategic Petroleum Reserve, where supplies are released only by order of the U.S. government, the SFR would be designed to be fully integrated into the California gasoline market, and would be operated by a private firm. This means that supply from the SFR would be released in response to market signals rather than through a political decision. For this reason, the SFR might serve to bring additional supply to the market efficiently as well as quickly in the event of a refinery outage. In addition, the reserve could ease access into the market for smaller, independent suppliers, increasing the level of competition in the state.

The Commission, based on a contractor study,⁴ examined a specific SFR concept and structure. This study analyzed the number and size of unplanned refinery outages over the last seven years, and indicated that a sufficient capacity for the SFR would be around 2.5 million barrels (one barrel is equivalent to 42 gallons).⁵

California uses two formulations of gasoline: a winter blend and a cleaner, summer blend. Because of the high costs that would be involved in switching seasonal gasoline blends, the study recommended that the SFR hold only the summer blend of fuel. The summer blend can be used all year, but air quality regulations do not allow the winter blend to be sold in the summer months. The study estimated that the total annual costs to the state for an SFR, including lease, oversight, and interest costs, would be between \$15 and \$25 million.

In addition to the features included in the SFR concept examined by the Commission, the AB 2076 legislation calls for a reserve that could be replenished by imported cargos only. However, throughout the review process, most stakeholders argued that the refill of an SFR should not be restricted to imports. Smaller companies particularly were against the import restriction, since they would not have access to international cargos. As a result, the Commission evaluated an SFR concept that allows supplies to be replaced from in-state production. However, even with an import restriction, the Commission would still recommend against a reserve.

What are the Benefits of Reduced Gasoline Price Volatility?

The Commission sponsored a study to measure the potential benefits to California consumers from reduced expenditures on gasoline *if* a strategic fuel reserve could dampen price volatility.⁶ The study, which assumed that the SFR would work as envisioned, analyzed the probability of refinery outages to estimate the costs of price spikes to consumers in a typical year.

Assuming that a reserve would eliminate spikes above 10 cents per gallon, the study estimated a “base case” annual benefit to consumers of \$400 million. With different assumptions from the base case, including omitting an unusually large price spike such as in 1999, the study yielded a range of potential benefits from \$140 to \$607 million per year.

This range of estimates, for the benefits of reducing the “peak” or spike portion of gasoline price volatility, appears to be plausible. However, price volatility includes both peaks and “valleys,” periods where the price falls below some long-run average.⁷ In the case of a gasoline supply disruption in California, a valley could occur after a period of high prices if imported cargos arrive after the refinery is repaired.

If the peaks and valleys occur so that the average price of the good is not affected, price volatility is said to be “symmetrical.” In this case, eliminating volatility can actually cost consumers money. In other words, the costs to consumers of eliminating periods of lower-than-average prices can outweigh the benefits from removing the periods of higher-than-average prices. The reason for this is that consumers can reduce consumption in high-price periods and increase it during low-price periods. If this were true for California gasoline prices, then dampening or eliminating volatility would be less likely to yield significant consumer benefits.

However, California’s gasoline price volatility in recent years does not appear to have been symmetrical; the costs to consumers of the peaks appear to have outweighed the benefits of the valleys.⁸ This seems logical since an unscheduled refinery outage that leads to a price spike is by definition unplanned, while the scheduling of imports to replenish supply is not. It is in the best interest of suppliers to bring in cargos before prices can drop below average (before other cargos have already arrived and/or the refinery problem has been repaired). Therefore, the Commission believes that reducing gasoline price volatility would offer net benefits to consumers, considering both peaks and valleys.

The Commission includes these results in the report to emphasize the potential benefits to consumers from reducing gasoline price volatility. These potential benefits serve as rationale for the Commission recommendations regarding marine infrastructure and permit streamlining. The next section explains the potential unintended consequences that could limit the effectiveness of an SFR in reducing price volatility. These potential

consequences form the foundation of the Commission's recommendation against implementing an SFR.

What are the Potential Unintended Consequences of a Strategic Fuel Reserve?

To provide benefits to California consumers, an SFR must significantly increase the amount of gasoline available in the market during a refinery outage or other event that leads to a price spike. In addition, an SFR must not lead to market impacts that could harm California consumers.

Many well-intended government market actions have had unintended consequences which were ultimately harmful to consumers and, in some cases, subverted the goal that the action was designed to achieve. Typically, this has occurred due to a failure to assess the reaction of market participants properly.

An SFR would introduce a new dynamic into the California gasoline market that would affect the profit-maximizing decisions of market participants. A new dynamic is not necessarily bad; all markets change over time, often to the benefit of consumers; however, an SFR is not a change brought on by natural market forces and, as a consequence, its impact would be very difficult to predict.

Refiners and gasoline traders already face a complex decision process; if an SFR were implemented, they would incorporate it into their market strategy and could react in a variety of ways. The Commission is concerned that unintended consequences as a result of this market response could reduce significantly the availability of SFR gasoline to dampen price spikes, and could adversely impact California consumers. Potential unintended consequences include the following:

- A reserve could displace private inventories,
- A reserve could offer profit-making opportunities that reduce its effectiveness, and
- A reserve could reduce the total supply of gasoline in California.

A Reserve Could Displace Private Inventories

Private gasoline storage includes a minimum level of inventory required for the distribution system to function⁹ and other inventories, referred to here as "stocks." The SFR is intended to increase total gasoline stocks in the marketplace above the level provided by private industry alone, so that additional gasoline would be available to the market during a supply disruption. However, public storage can often displace, or "crowd out," existing and/or future private inventory. This criticism has frequently been leveled at the U.S. Strategic Petroleum Reserve.¹⁰ The Commission is concerned that

crowding out could significantly reduce the effectiveness of an SFR in reducing price volatility.

Stocks provide benefits to private holders by smoothing production fluctuations, easing adjustment to seasonal changes in demand, and reducing the likelihood of product outages. Public storage leads to crowding out when private holders perceive lower benefits to keeping stocks and adjust their level of inventories downward accordingly. The amount of crowding out depends on how well public holdings substitute for private stocks, which is a function of the rules established for release of public inventory as well as other factors such as transportation costs.

Because the SFR would be integrated into the California gasoline market, with supply available daily to the highest bidder, the amount of crowding out could be significant. Gasoline suppliers could potentially rely on the SFR for a sizeable portion of their inventory needs, since gasoline from this reserve would be easily accessible. Crowding out would almost certainly be more significant than in the case of the Federal Strategic Petroleum Reserve, where release rules are much more arbitrary.

To understand how crowding out could make the SFR less effective, suppose that all private stocks were displaced, and the entire SFR supply served simply as a substitute for these inventories. In this case, the reserve would have virtually no impact on gasoline price volatility, since additional stocks would not be available during a supply disruption. Total displacement is not likely since it would still be convenient for gasoline suppliers to keep some stocks on hand and there would be a cost associated with acquiring SFR gasoline. However, the degree of crowding out could be high enough to reduce significantly the effectiveness of the SFR in dampening price spikes.

If the SFR were much larger than private stock levels, displacement would become less of a concern. In this case, even if a significant amount of crowding out occurred over time, the market would end up with a higher level of inventory. Therefore, determining the approximate magnitude of private stocks becomes important.

The most recent data available from the Energy Information Administration (EIA) were used to estimate a range for private stocks.¹¹ The EIA reports that between 1997 and 2002, total reformulated gasoline product inventories in California varied between 7.9 and 12.5 million barrels. To estimate private stocks, the amount of inventory required for the distribution system must be subtracted out. Under the conservative assumption that the lowest level of total inventories reported by EIA in this period corresponded to the distribution inventory requirement,¹² private stock levels were estimated to range from 0 to 4.6 million barrels.

Some portion of private stocks would not likely be displaced by SFR gasoline. However, since the maximum proposed size of the SFR is 2.5 million barrels, the Commission believes that crowding out is a critical concern. Put another way, the Commission is concerned that implementing the SFR would transfer much of the costs

of maintaining private inventories to the state, without significantly dampening price volatility.

In addition, new construction of private storage could be displaced. A public storage program reduces incentives for new firms to enter the storage market, or for existing firms to expand, due to reduced need in the market; this is entry that would have occurred in the absence of the public program.

A Reserve Could Offer Profit-Making Opportunities

Although the SFR could displace significant amounts of private stocks in general, these stocks fluctuate and have sometimes been at levels below the proposed size of the reserve. Therefore, even if the reserve completely displaced private stocks during such periods, it is conceivable that additional inventory would be available in the reserve.

The most severe gasoline price spikes occur when private stocks are at very low levels, so the SFR could potentially offer benefits at these critical times. However, low private stocks do not occur randomly, but rather as a consequence of market conditions. The Commission is concerned that these conditions would also affect the availability of SFR gasoline as market participants take advantage of profit-making opportunities, described below, limiting its effectiveness in mitigating price spikes.

Gasoline in California, like many other commodities, is bought and sold in a wholesale, or “spot,” market and in a forward market.¹³ The forward market for gasoline allows traders to hedge the risk associated with bringing in a cargo of gasoline—the risk that gasoline prices will drop before the cargo arrives. A trader bringing in a cargo could *sell a forward contract*, which would guarantee the sale of the gasoline at a certain price when it is delivered. The other party in this arrangement is *buying a forward contract*.

The difference, or “spread” between the current spot price and the forward price, the negotiated price for future delivery of gasoline, is a key driver of the level of private stocks.¹⁴ When the forward price is below the spot price, the market is referred to as being in “backwardation.”¹⁵ If the market enters a period of backwardation, this signals the market that prices are expected to fall in the near future. As a result, rational inventory holders will reduce their stocks, selling gasoline out of inventory. Holding on to too much inventory at such times means lower profits if prices fall as expected.

Figure 1 plots the daily one-month forward price minus the spot price for 2002¹⁶, while Figure 2 shows average weekly inventory holdings¹⁷ for the same year. As the points labeled 1, 2, and 3 on each graph indicate, inventories are drawn down sharply when the market is in severe backwardation (when the forward price is much lower than the spot price).

Figure 1

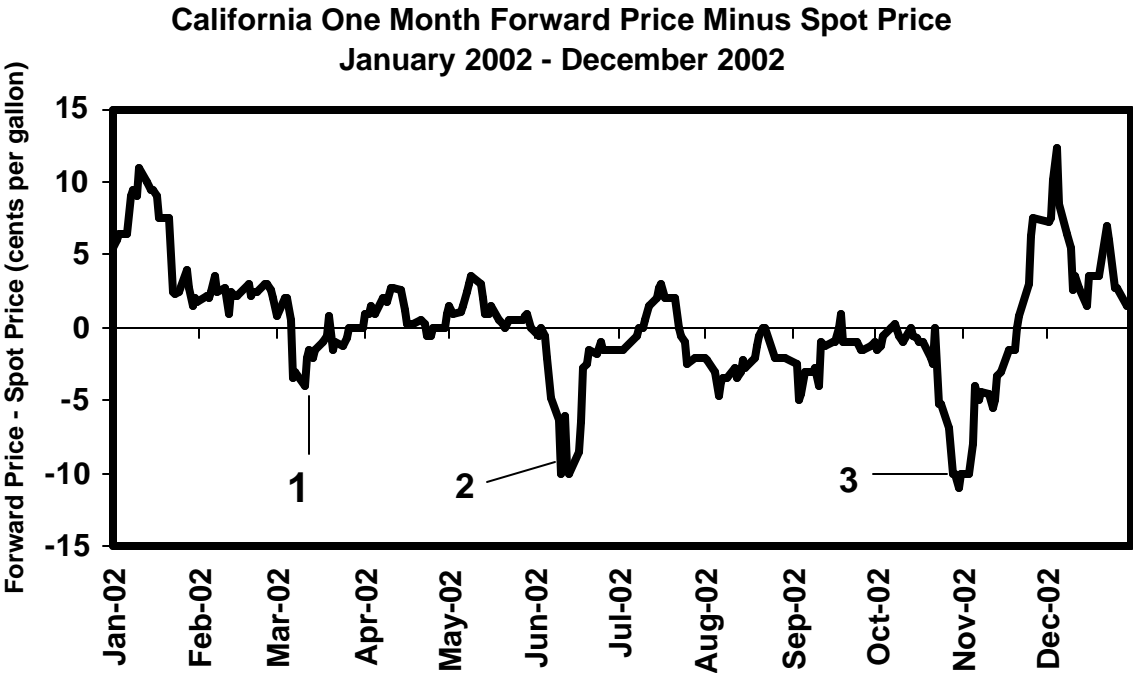
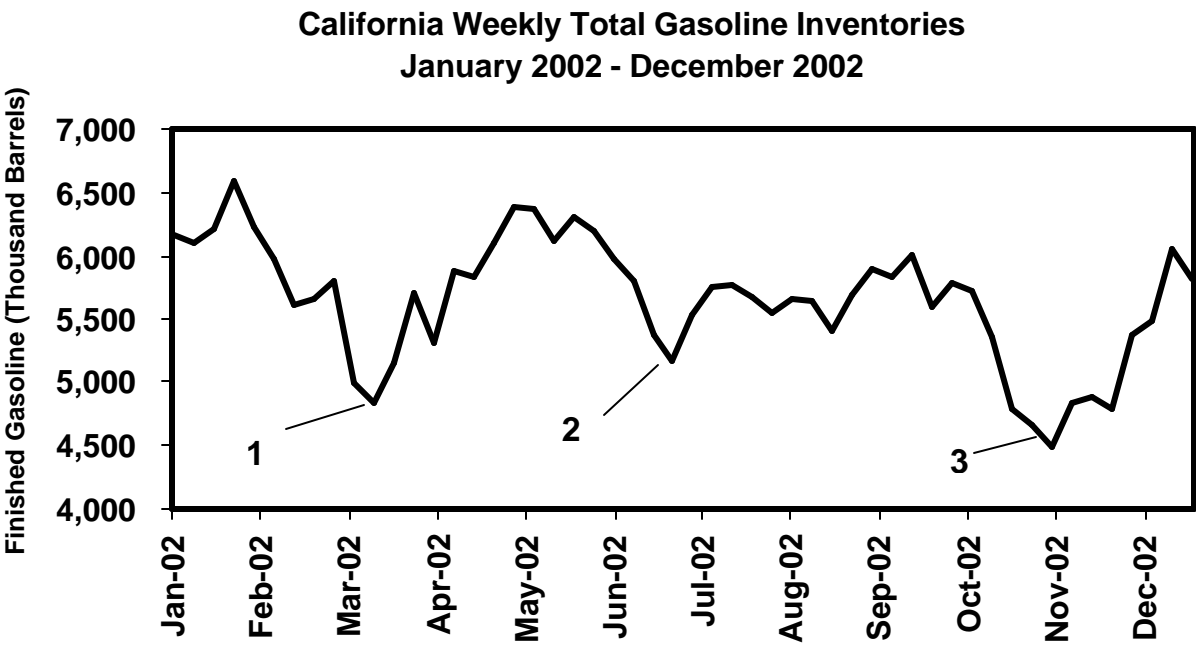


Figure 2



A period of backwardation, which leads to low levels of private stocks, should also affect the inventories in the SFR. Consider a case where the spot price of gasoline exceeds the one-month forward price by ten cents per gallon. A trader or refiner could bid up to nine cents per gallon for SFR gasoline, which would then be sold on the spot market, and purchase a forward contract, a guarantee that he can purchase gasoline in the future at the current forward price, to replenish the reserve supply one month later. This would net the trader a profit of one cent per gallon, which would not be trivial with trades in the thousands and hundreds of thousands of barrels. As long as backwardation continues, the rational response in the market would be to continue to draw gasoline from the SFR. Such profit-making, or “arbitrage,” activity could lead to very low reserve supply at a time when a refinery outage occurs, reducing the effectiveness of the SFR in dampening any price spike.

The most obvious periods of backwardation occur after supply disruptions. Prices are expected to remain high for a short period of time and then fall when the refinery is repaired and/or imported cargos arrive, and the spread between spot and forward prices will reflect these expectations. In these cases, the rational response described above would serve to mute any gasoline price spike, assuming supply is available in the SFR. In this case, arbitrage opportunities lead to a desirable result for California consumers.

However, the California gasoline market may be in backwardation for long intervals for reasons unrelated to refinery disruptions.¹⁸ Crude oil prices often exhibit backwardation (as do most extractive resources), which affects the spread between spot and forward or futures prices for refined petroleum products.

As an example, oil prices were in backwardation for virtually all of the year 2000. As a consequence, California gasoline spot prices remained above forward prices for almost the entire year, aside from the periods in which backwardations occurred as a result of two major refinery outages. This example points out the potential problem: had the SFR been in existence in 2000, arbitrage opportunities in the early part of the year could have left the reserve with little supply when the refinery problems occurred later in the year.

Additional rules could be put in place to avoid the potential effects of such profit-seeking behavior, such as daily limits on SFR withdrawal, but in this case an SFR would no longer be as well integrated into the gasoline market. This is a critical point: if the SFR were seamlessly merged into the California gasoline market, arbitrage opportunities could leave little or no supply in the SFR; if it were not as well integrated, the reserve would lose its potential effectiveness in dampening price spikes.

It is worth noting that the release of gasoline from the SFR could conceivably work to eliminate backwardation. Drawdown from the reserve could reduce the spot price by increasing supply to the market, and this would also reduce the spread between spot and forward price. If this were the case, it is possible that any backwardation could be eliminated well before the SFR were empty, removing the profit-making opportunities.

However, if crowding out were significant and the reserve served mainly as a substitute for private inventories before the market entered a period of backwardation, the situation would be similar to that without a reserve. Backwardation could continue for an extended period, as in 2000, since the SFR would not contribute significantly to the total amount of stocks. SFR supply would reach a very low level, just as private stocks would without the reserve (as shown in Figure 2).

Even without significant crowding out, arbitrage opportunities may not be eliminated before SFR supply is greatly reduced. For example, supply could be drawn from the reserve and regular imported cargos, cargos that would arrive without any refinery disruption, could be scheduled in such a way as to take advantage of backwardation. In this case, SFR gasoline would simply displace imports¹⁹ and total supply and therefore spot price and arbitrage opportunities would not be affected.

A Reserve Could Reduce the Total Supply of Gasoline

If in-state production could be used to replenish SFR gasoline, total supply to the market could, in some plausible circumstances, actually diminish (relative to a no-SFR world). The Commission is concerned that this could occur, and that higher average gasoline prices in the state would result.

Consider a refiner undergoing an outage. In many instances, the refiner would bring in cargos from outside the state to cover the outage. If an SFR were available, the refiner could instead draw from the reserve and replenish the supply with his own future production.²⁰ Since the cargos no longer arrive, total gasoline available to the market would be reduced.

More precisely, in the case with no SFR, the market loses the amount of disrupted barrels minus the imported cargos; in the case with an SFR, it loses the entire disrupted amount, since the refiner must replace the gasoline drawn from the reserve during the outage. With an SFR in place, consumers might have benefited from a dampened price spike immediately after the refinery problem but might then have faced a higher *average* price due to the loss in total supply.

What are the Alternatives to a Strategic Fuel Reserve?

Severe price volatility is likely to continue in California, at least for the next few years. Therefore, to reduce price volatility, the Commission considered the following alternatives to an SFR:

- Stimulate the California gasoline forward market through state participation,
- Identify the steps necessary to enhance the state's marine infrastructure, and
- Streamline the storage infrastructure permitting process.

The intent in the first alternative is to increase liquidity (the number of trades) in the gasoline forward market through state purchases of forward contracts. If more buyers of forward contracts were available, importers, who sell forward contracts, might find it easier to hedge the risk that gasoline prices could fall while the cargo is in transit. Importers might then be willing to bring more cargos into California, which could increase available supply during a disruption.

A study sponsored by the Commission compared the California forward market for gasoline with other forward markets.²¹ The study found that neither the number of trades nor the number of participants in the state gasoline forward market appears to be especially low in comparison with other forward markets. In addition, the study found little evidence that a lack of liquidity in the forward market impairs prospective importers.

The Commission believes that the second and third options are more promising. These are described below.

Identify the Steps Necessary to Enhance Marine Infrastructure

The Commission sponsored a study of California's marine infrastructure to assess its ability to accommodate imported petroleum products.²² The study identified the current and future constraints within the system of wharves, storage tanks, and pipelines that could impair the ability of importers to deliver cargos to the state. The Commission believes that these constraints do impact imports of gasoline, and that this may reduce the supply of gasoline available during a disruption.

California imports both crude oil and petroleum products to meet state demand for fuels. Over the next five to ten years, demand for gasoline is expected to grow at a rate of almost two percent per year, while the capacity of California refineries to produce gasoline is not expected to keep pace. Consequently, imports of gasoline as well as crude oil will need to increase.

The study for the Commission indicated that the state marine infrastructure for petroleum products is at or near the limits of throughput capacity, and unless the infrastructure is expanded, additional imports will increase marine congestion in California. The potential problems are most serious in Southern California, where the bulk of the increased quantities of imported crude oil and refined petroleum products will be received. (The appendix provides more details from the study on import constraints and bottlenecks.)

Marine vessels require storage tanks of sufficient capacity to be able to offload their cargos in a timely manner, avoiding costly demurrage fees and reducing the risk of creating additional scheduling conflicts for other vessels. Access to storage tanks is especially constrained in Southern California. In particular, two of the three facilities

used to receive gasoline and gasoline blending for gasoline are highly utilized and constrained by bottlenecks that prevent increased imports.

If these constraints and bottlenecks can be alleviated to some degree, imported gasoline supply could reach the California market more quickly during a refinery outage, helping to dampen price volatility. On the other hand, if marine infrastructure capacity does not expand, volatility could become even more severe.

The Commission recommends a comprehensive evaluation of California's future petroleum product import needs to identify steps that can be taken to ensure that marine infrastructure and port facilities will be adequate to accommodate the unconstrained movement of petroleum products during the next twenty years. This evaluation should be conducted in consultation with the following agencies:

- The State Lands Commission,
- The Ports of Los Angeles and Long Beach,
- The Coastal Commission, and
- The San Francisco Bay Conservation and Development Commission.

Streamline the Storage Infrastructure Permitting Process

The Commission is aware of 1.4 million barrels of private storage capacity that are either under construction or where construction is planned in the next several months.²³ Thus, conditions in the California gasoline market may improve slightly in the near future. Increased private storage could result in more gasoline inventories available to the market during a supply disruption. The Commission believes that ongoing development of private storage capacity reduces the need for an SFR.

However, all of these storage projects have been undertaken with the use of existing permits. Future projects to construct additional storage tanks could require more extensive environmental assessment and a lengthier approval process. Based on a Commission survey of the petroleum industry, the Commission concluded that the state's petroleum product storage infrastructure is still inadequate, even with these new projects, and that the permitting process may unduly burden applicants and agencies.²⁴ The Commission believes that a streamlined permitting process would further increase investments in private storage, which should increase the supply of gasoline available during a disruption.

The high costs of the permitting process result in a shortage of storage capacity. These costs lead to higher lease and rental rates for tanks, so gasoline suppliers hold lower inventories than they might otherwise choose. This results in lower inventory available during a refinery outage and therefore more gasoline price volatility. In addition, higher lease and rental rates raise the operating costs to suppliers, resulting in higher average market prices.

The Commission sponsored a detailed study on the permitting of petroleum product storage facilities.²⁵ The study examined the process by which petroleum industry participants obtain the permits required for the construction or acquisition of petroleum product storage facilities. In addition, the study identified bottlenecks, redundancies, and unnecessarily burdensome regulatory processes, and recommended improvements in the permitting process. The study did not examine or make any recommendations regarding existing environmental or safety standards, and the Commission is not considering any change to these standards.

Table 1 lists the process change recommendations found in the study report. The recommendations are grouped into three categories: agencies, applicants, and legislation. The Commission believes that the third category is the most critical, as discussed below.

Table 1: Streamlining for Petroleum Product Storage

<ul style="list-style-type: none"> • Recommendations for Agencies <ul style="list-style-type: none"> – Provide training and technical assistance to local agency staff – Reduce discretionary decisions by individual permit writers to establish consistency in the permitting process – Avoid duplication of environmental studies – Establish applicant timeline and milestones for each permitting project and track progress – Address the issue of multiple appeals of agency decisions – Establish heavy industry-zoned property to eliminate the need for conditional use permits
<ul style="list-style-type: none"> • Recommendations for Applicants <ul style="list-style-type: none"> – Involve stakeholders early in permitting process – Request pre-application conferences or “scoping” meetings with agencies to discuss how agencies’ specific rules will apply to their proposed projects – Establish communication with agencies to ensure established “completeness” criteria are met for permit application submittals – Establish a process with the relevant air district to establish and approve Best Available Control Technology standards early in the permitting process – Conduct siting studies for proposed facilities to identify potential sites that could be zoned as heavy industrial, and identify potential stakeholder issues
<ul style="list-style-type: none"> • Recommendations for Legislation <ul style="list-style-type: none"> – Provide statewide authority for implementing and enforcing the Permit Streamlining Act – Consider expanding the Unified Permit Program to include air and water districts as well as local agencies involved in permitting petroleum product storage facilities

The Permit Streamlining Act (PSA or Act) establishes strict timelines for agencies to conduct permit application reviews and issue decisions. The PSA requires state and local agencies to list the information and criteria that they will use in evaluating a permit application. These timelines are frequently not met, without penalty to the permitting agency. Little effort appears to be made to comply with the PSA, since the Act is not very well known among stakeholders in the permitting process. No agency within California is responsible to implement the PSA, and this appears to be a fundamental problem. The Commission believes that the requirements of the PSA could be promoted and enforced by a single agency so that applicants and permitting agencies become familiar (and compliant) with the Act.

The Commission believes, however, that beyond the issues addressed by the PSA, the state needs to coordinate the different agencies responsible for permitting petroleum storage infrastructure in California. This issue is very complex, but a coordinated strategy could yield significant benefits by eliminating duplicative efforts on the part of agencies and applicants and providing a time-certain process with decision-making authority.

The state has dealt with similar problems in the past. In response to concerns about the power plant siting process, the Legislature passed the Warren-Alquist Act in 1974, establishing a state permitting agency for power plants. The legislation gave the Energy Commission exclusive authority over thermal electric generating power plants 50 megawatts or larger as well as related facilities such as transmission lines. As a result, the Commission developed a 12-month process for certification of applications.

As the lead agency under the California Environmental Quality Act (CEQA), the Commission is required to consult with responsible local, state, and federal agencies as part of its review process. The Commission's power plant licensing process has proved to be very effective in assuring the timely review and approval of new generating capacity in California because it: 1) consolidates all state and local agencies into a single permitting process, 2) has the ability to override other state and local agency decisions, 3) involves extensive public participation, and 4) has a certified CEQA equivalent review process.

The Commission recommends that the Governor and the Legislature establish a state licensing authority for petroleum storage infrastructure and related facilities, modeled on the Energy Commission's power plant licensing process. A licensing authority would help ensure statewide and regional coordination among permitting agencies, eliminate duplication of efforts, provide a time-certain process, and reduce costs borne by applicants and agencies. This state licensing authority would incorporate the following elements:

- The establishment of a single permitting process that consolidates all state and local agency reviews, has a CEQA equivalent review process, and involves extensive public participation.

- The ability to review and determine whether a proposal will comply with applicable laws, ordinances, regulations, or standards; and whether it will result in potentially significant adverse environmental or public health and safety impacts.
- The establishment of conditions, based on its review and the input of responsible agencies and the public, governing the construction and operation of the facility, which will ensure compliance and avoid or mitigate identified significant impacts.
- The ability to license a proposal that results in significant environmental impacts based on a finding that there are no feasible mitigation measures or project alternatives that would avoid or lessen the impacts, and that the benefits of the project outweigh the unavoidable significant environmental impacts,
- The authority to override local, regional, or state regulations based on a finding that the project is needed for public convenience and necessity and there are no more prudent and feasible means of achieving such convenience and necessity.
- The requirement that licensing decisions can only be appealed directly to the California Supreme Court.

¹ The impact of imported cargos on price can occur before the cargos actually arrive, if the gasoline market is generally aware that they are enroute.

² Price volatility includes both “peaks” (spikes) and “valleys”, as discussed later in this report.

³ Reports are available on the Energy Commission’s website (www.energy.ca.gov/fuels/petroleum_dependence/index.html).

⁴ *California Strategic Fuels Reserve, Revised Contractor Report*, Publication P600-02-017D, California Energy Commission, July, 2002.

⁵ The study recommends a total construction of 5 million barrels of storage capacity, of which half could be subleased to market participants.

⁶ *Economic Benefits of Mitigating Refinery Disruptions: A Suggested Framework and Analysis of a Strategic Fuel Reserve*, by Anthony Finizza, Ph.D. Publication P600-02-018D, California Energy Commission, July 2002.

⁷ Such volatility is typical in the market for various crops, where rainy years can be followed by arid ones.

⁸ This conclusion comes from examination of California retail price data before, during, and after supply disruptions.

⁹ For example, for a refiner to provide gasoline to a supplier through a pipeline, the pipeline must already be full of product.

¹⁰ See, for example, pp. 438-45 of *Storage and Commodity Markets*, by Jeffrey C. Williams and Brian D. Wright (Cambridge University Press, 1991)

¹¹ *EIA’s Petroleum Product Stocks for California*. Energy Information Administration, June, 2003.

¹² Required levels of distribution inventory are likely lower than 7.9 million barrels since refiners always keep at least a small amount of stocks. In addition, EIA reports holdings on the last day of each month. Therefore, the actual minimum value is almost certainly smaller than 7.9 million barrels and the maximum larger than 12.5 million barrels. Finally, EIA reports only inventories from major refiners and bulk terminals with storage tanks sized 50,000 barrels or larger. For these reasons, estimates of stocks reported here are likely to be underestimated.

¹³ Forward markets operate like futures markets (e.g., pork futures) but less formally. Futures markets provide some features that forward markets do not, including standardized contracts and formal clearinghouses.

¹⁴ There are of course other reasons why stocks fluctuate. For example, levels tend to be low just before refinery “turnaround”, when refiners switch from one seasonal blend to another.

¹⁵ More specifically, a market is said to be in backwardation when the spot price plus storage costs and interest charges is greater than the forward price. This more precise definition is not important for the discussion here.

¹⁶ Source: Oil Price Information Service

¹⁷ Source: California Energy Commission PIIRA inventory data. Inventory levels shown in Figure 4 are smaller than those reported by EIA since the PIIRA data includes only data from refiners.

¹⁸ From January 1999 through December 2002, the spot price was above the one-month forward price for almost two thirds of the time (source: Oil Price Information Service).

¹⁹ Suppose a refiner were planning to bring in a cargo in July. With an SFR (and with prices in backwardation), the refiner could instead purchase reserve supply in July and bring in the cargo in August to replenish the reserve.

²⁰ This assumes that the refiner is still able to meet his contractual obligations.

²¹ *Government Use of the California Gasoline Forward Market*, Contractor Report P600-03007D, California Energy Commission, April, 2003.

²² *California Marine Petroleum Infrastructure*, Contractor Report P300-03-008D, California Energy Commission, April, 2003.

²³ Source: Stillwater Associates, California Energy Commission Workshop, April 24, 2003.

²⁴ *California Strategic Fuels Reserve, Revised Contractor Report*, Page 82. Publication P600-02-017D, California Energy Commission, July, 2002

²⁵ *Permit Streamlining for Petroleum Product Storage*, Contractor Report P300-03-006D, California Energy Commission, April, 2003.

APPENDIX

Outlook for Marine Infrastructure in California

Crude Oil Imports and Outlook

California refiners obtain crude oil from in-state production, Alaska and foreign sources. Waterborne receipts of crude oil for 2001 amounted to an average of 425 thousand barrels per day for the San Francisco Bay Area and over 520 thousand barrels per day for the Ports of Los Angeles and Long Beach. Both California and Alaska crude oil production continue to decline, while the nearly 2 million barrels per day of crude oil used by California's 21 refineries is forecast to increase by less than 1 percent per year. Refiners are therefore expected to increase their imports of crude oil from foreign sources. These additional imports will be brought to the state in marine tankers.

Current capacity to receive crude oil is sufficient for both Northern and Southern California. The outlook for the next several years is that Very Large Crude Carrier (transporting 1 to 2 million barrels) use will need to double from an average of one to two ships per week due to greater reliance on foreign sources of crude oil. For this reason, additional infrastructure improvements for berthing facilities as well as crude oil storage tanks will need to be constructed. This should not create a major problem if industry can undertake the work within the next 5 to 10 years. However, this outlook assumes that existing infrastructure assets for receiving crude oil are not diminished over the next several years by new operational restrictions imposed by port authorities or other governing bodies.

Refined Product Imports and Outlook

Imports of gasoline, blending components, diesel and jet fuel have continued to grow along with demand for these products. As is the case with crude oil, imported refined products arrive by marine vessel. Refined products accounted for 11 percent of all waterborne receipts for the Bay Area and 30 percent for Southern California during 2001. Imports of gasoline and blending components are expected to increase from 150 to 300 thousand barrels per day by 2010. Forecasted imports for both diesel and jet fuel are increasing at similar rates. By 2010, the number of marine vessel movements is expected to double and an additional storage tank capacity of between 0.5 and 1 million barrels per year would have to be constructed to keep up with the forecast demand.

Specific Findings

The Commission-sponsored study of marine infrastructure concluded that the marine petroleum infrastructure in the San Francisco Bay Area and the Los Angeles Basin (California's main refining centers) is constrained in certain key areas. Under current commercial and public policy conditions, staff believes that

it is likely that future infrastructure demand will outstrip capacity. The areas of concern are separated into three categories: wharves, storage tanks, and the gathering lines used to gain access to the petroleum pipeline infrastructure.

Wharves

The utilization rate for wharves is high enough to cause scheduling problems at 20 percent of the berths in Southern California. Additional receipts of petroleum products at these locations could be problematic. On the other hand, 30 percent of the berths are underutilized and can accommodate additional imports, but these facilities are generally for proprietary use and are not available to independent importers. Northern California wharves are generally less constrained and have more underutilized capacity, but movement of petroleum products face other limiting factors related to dredging.

The depth of the channels and marine berths is a factor that can constrain the ability to receive and offload marine vessels. In Northern California, silt flows from the Sacramento Delta are deposited as water flows toward San Francisco Bay. The accumulation of silt can result in draft restrictions for marine vessels at wharves and certain points along the shipping channels. One of these locations in the greater Bay Area is located near Richmond (Pinole Shoals). The times at which dredging can be conducted in this area is limited due to environmental protection for certain migratory fish species. Other issues have arisen with regard to disposal of the dredging spoils (in the Bay, out at sea, and land disposal) and adequate federal funding to pay for the work.

The impact of increased silt levels is that the water becomes too shallow for marine vessels of certain size to safely operate. Companies are forced to moor these vessels in San Francisco Bay and use smaller vessels (like barges) to partially offload the ships so that they sit higher in the water. Delayed offloading of these vessels increases costs for consumers and increases the risk of spills due to the increased number of transfers.

Storage Tanks

Marine vessels require storage tanks of sufficient capacity to be able to offload their cargoes in a timely manner, avoid costly demurrage fees, and reduce the risk of creating additional scheduling conflicts for other vessels. Access to storage tanks is somewhat constrained in Southern California at this time, but is less of a problem in the Bay Area.

A number of projects are underway to construct additional storage tank capacity that will provide some potential relief. These planned additions, however, are not expected to keep up with forecasted import demand. Existing constraints could therefore become more serious unless additional projects are undertaken and completed within the next couple of years. It is important to note that all of the recent projects have been undertaken with the use of already existing permits.

Future projects to construct additional storage tanks will require new permits and therefore will undergo a lengthier approval process.

Petroleum Product Pipelines

Cargos offloaded from marine vessels into storage tanks are routinely transferred to other refineries and terminals located throughout the state by the use of a network of interconnected petroleum product pipelines. The segments of pipelines that lead away from the wharves can be operating at or near maximum capacity during certain periods of the year, such as the summer months when gasoline demand is highest and the need for imports is greatest.

Pipeline constraints are greatest for the segments connecting the wharf storage tanks with the petroleum product pipeline system operated by Kinder Morgan. Bottlenecks in this network of pipelines have resulted in increased movements of gasoline and diesel fuel by tanker truck. Plans for the expansion of marine infrastructure to accommodate increased quantities of imports will have to consider expansion of these gathering systems. Expansion of existing pipelines or construction of new pipeline segments can be a complex process, and could significantly increase the time required to obtain the necessary permits—pipelines usually cross several different jurisdictions and can require modifications to existing tariff rates for those projects that involve common carrier companies such as Kinder Morgan.

Other Areas of Concern

Other issues were raised during the investigation of California's marine infrastructure, issues which staff believes merit additional attention.

Third Party Storage Tanks

Lack of access to third-party tankage in Southern California is a type of "barrier to entry" for independent market participants who wish to import gasoline and other refined products on a speculative basis. These importers provide a valuable function by providing additional supplies of gasoline and other petroleum products during temporary supply disruptions. However, access to non-proprietary storage tanks and marine facilities to offload the vessels is limited. Expansion of storage tank and associated infrastructure could increase the ability to move supplies of gasoline and other petroleum products to California.

Port Policies

Port commercial development plans can be at odds with continuation or expansion of petroleum imports. The majority of the commercial operations conducted within the Ports of Los Angeles and Long Beach involve the receipt and offloading of cargo container vessels. The movement of these containers through both ports is expected to double over the next 10 years. To accommodate this additional growth, both ports have plans to expand

development of cargo container business. Access to water and sufficient land space is necessary. This demand can place additional pressure on operators of petroleum product import facilities when they try to renew leases or expand operations to properly handle the increased quantities of petroleum imports.

State Transportation Fuel Needs Versus Local Decisions

Local decisions can also impact petroleum infrastructure projects. Amendments to existing leases and applications for new petroleum projects are normally overseen by a lead agency composed of local boards or councils. Pressures exerted by local constituents can increase the difficulty associated with obtaining the compromises needed to allow commerce related to the import and export of petroleum products to continue or expand. In addition, local concerns may result in decisions that adversely impact petroleum-related commerce.